

## ABSTRACT OF THE DISCLOSURE

Disclosed is a method for determining an overlay error between at least two layers in a multiple layer sample. An imaging optical system is used to measure a plurality of measured optical signals from a plurality of periodic targets on the sample. The targets each  
5 have a first structure in a first layer and a second structure in a second layer. There are predefined offsets between the first and second structures. A scatterometry overlay technique is then used to analyze the measured optical signals of the periodic targets and the predefined offsets of the first and second structures of the periodic targets to thereby determine an overlay error between the first and second structures of the periodic targets.